REMARKS

Claims 8-9, 19-20 are rejected under 35 U.S.C 112. Claims 1-7 and 12-18 are rejected under U.S.C 102(b) as being anticipated by Harkin et al. (US 5,705,413). Claims 10-11 and 21-22 are rejected under U.S.C 103(a) as being unpatentable over Harkin et al. (US 5,705,413) in view of Kawasaki et al. (US 6,426,245). In response to the Office action identified above, please accept the following remarks.

1. Claim 8-9 and19-20 are refected under 35 U.S.C 112,first paragraph, because the specification, while being enabling for uses an excimer laser to irradiate the amorphous film, to form a polysilicon film in the first region, does not reasonably provide enablement for the amorphous silicon film in the second region become completely melted and the amorphous silicon film in the first region become partially melted. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The specification describes the amorphous silicon film in the first region not melted or partially melted (see paragraph 0019).

Response:

Applicants accept the Examiner's opinion and amend the claims in the above AMENDMENT portion. No new

matter has been introduced. Claim 8 and 19 are amended to overcome this rejection. Reconsideration of the amended claims 8 and 19 is respectfully requested.

2. Claim 1-7 and 12-18 are rejected under 35U.S.C 102(b) as being anticipated by Harkin et al. (U.S.C 5,705,413).

Harkin et al. teaches a method of forming a polysilicon film by an excimer laser crystallization process (Abstract). Harkin et al. shows providing a substrate (having a buffer layer) defined with a first region and a second region (Fig.1-2, col. 7, lines 1-25, col.10, lines 1-10). Harkin et al. discloses forming an amorphous silicon film on the substrate, forming a mask layer on the amorphous silicon film, performing a first photo-etching process to remove the mask layer on the remove the mask layer on the first region (Fig. 3-5, 13-14, col. 5, lines 50-65 col. 6, lines 1-20, col. 7, lines 24-67, col. 12, lines 49-67, col. 13, lines 1-17). Harkin et al. teaches forming a heat-retaining capping layer covering the mask layer and the amorphous silicon film (Fig. 3-5, col. 7, lines 40-67).

Furthermore, Harkin et al. shows performing the excimer laser crystallization process to make the amorphous silicon film in the first region crystallize to a polysilicon film (Fig. 5, col. 6, lines 1-20, col. 8, lines 9-25). Harkin et al. discloses an etching process to remove the heat-retaining layer, the mask layer, and to etch the portions of the amorphous film after forming the polysilicon film (Fig. 13-14, col. 4,lines 24-35, col. 9, lines 40-45, col.13, lines 1-17).

Harkin et al. teaches the mask layer and the heat-retaining capping layer comprising silicon oxide, silicon nitride, silicon oxynitride or a metal (col. 3, lines 47-50, 63-67, col. 4, lines 1-4).

In addition, Harkin et al. describes the masking pattern (20,21) having a thermally-stable absorbent layer or reflective inorganic material and an insulating layer having sufficient thickness to mask the amorphous film. Therefore, Harkin et al. anticipated both recitations: forming a heat-retaining capping layer covering the mask and forming a mask layer on the heat-retaining capping layer (Abstract, col. 2, lines 58-67, col. 3, lines 1-5, col.3 lines 25-67, col. 4, lines 1-24). In addition, the elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, i.e., identity of terminology is not required. In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Response:

Applicant intends to point out the difference between the claim 1 and 12 of the present application and prior art. The claim 1 and 12 of the present application are repeated in the following:

"Claim 1 (Original): A method of fabricating a polysilicon film by an excimer laser crystallization process, the method comprising following steps:

providing a substrate defined with a first region and a second region;

forming an amorphous silicon film on the substrate;

forming a mask layer on the amorphous silicon film;

performing a first photo-etching process to remove the mask layer in the first region;

forming a heat-retaining capping layer covering the mask layer and the amorphous silicon film; and

performing the excimer laser crystallization process to make the amorphous silicon film in the first region crystallize to a polysilicon film."

"Claim 12 (Original): A method of fabricating a polysilicon film by an excimer laser crystallization process, the method comprising following steps:

providing a substrate defined with a first region and a second region;

forming an amorphous silicon film on the substrate;

forming a heat-retaining capping layer on the amorphous silicon film;

forming a mask layer on the heat-retaining capping layer;

performing a first photo-etching process to remove the mask layer in the first region; and

performing the excimer laser crystallization process to make the amorphous silicon film in the first region crystallize to a polysilicon film."

As disclosed in the claim 1 the present application, there are two obvious differences between Harkin's disclosure and the present application. In the present application, **a buffer layer 112 is formed on the substrate 110 (As shown in Fig. 5). Then, an amorphous silicon film 114 is formed on the buffer layer 112 and a mask layer 116 is formed on the amorphous silicon**

film 114. A first photo-etching process is performed to remove the mask layer 116 in the first region to expose the amorphous silicon film 114 in the first region. Then, a chemical vapor deposition process is performed to form **a heat-retaining capping layer 118 covering on the mask layer 116, or** a heat-retaining capping layer 216 is first formed and then **a patterned mask layer 218 is formed to covering on the heat-retaining capping layer 216** (as disclosed in the claim 12 and Fig.8). **The buffer layer** 112 is formed on the substrate 110 to prevent the **impure materials from diffusing upward in latter processes** and affecting the quality of the polysilicon film. **The heat-retaining capping layer** 118 is used to **reduce the heat dissipation rate in the crystallization process and maintain the amorphous silicon film 114 in a higher temperature environment** for more time to perform the crystallization that leads to increase the grain size effectively.

According to Harkin's disclosure, a semiconductor film 1 is formed on an insulating substrate 10 and then an insulating barrier layer 20 is formed on the semiconductor film 1. After that, **a masking pattern 21 is formed on the insulating barrier layer 20.** The insulating barrier layer 20 serves as **a diffusion barrier against adverse effects of heat diffusion or impurity diffusion from the masking pattern of inorganic material (col. 3 lines 47-62).** Thus, the heat-retaining capping layer of the present invention is absolutely different from the insulating barrier layer of the Harkin's disclosure, even if the

heat-retaining capping layer of the present is formed between the amorphous silicon film and mask layer. Because the function and purpose of heat-retaining capping layer and insulating barrier layer are different, even if their materials are the same, **the heat-retaining capping layer and the insulating barrier layer cannot be regarded as the same.**

From the above discussion, the Applicant believes that the claim 1 and 12 of the present application is absolutely different from the Harkin's disclosure. Claims 2-7 and 13-18 are dependent upon the amended claim 1 and claim 12, and they should be allowed if the amended claim 1 and claim 12 are allowed. Reconsideration of claims 2-7 and 13-18 is therefore requested. Reconsideration of claim 1-7 and 12-18 is therefore requested.

3. Claim 10-11 and 21-22 are rejected under 35 U.S.C 103(a) as being unpatentable over Harkin et al. (U.S. 5,705,413) in view of Kawasaki et al. (U.S 6,426,245).

Regarding claims 10-11 and 21-22, Harkin et al. dows not specifically show the long duration laser having a period in a range of about 150 to 250 ns. However, Kawasaki et al. teaches the excimer laser having a period form several nanoseconds through several hundred nanoseconds (col. 4, lines 58-67).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to specify any desired period on Harkin et al. reference as taught by Kawasaki et al. in order to

optimize the laser conditions and better control the crystallizing growth (Kawasaki et al., col. 4, lines 58-67).

In addition, it is the examiner's position that the period in a range of about 150 to 250 ns it is not critical to the invention. Therefore, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Response:

Claims 10-11 and 21-22 are dependent upon the amended claim 1 and claim 12, and they should be allowed if the amended claim 1 and claim 12 are allowed. Reconsideration of claims 10-11 and 21-22 is therefore requested.

Respectfully submitted,

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